

ABSTRACT OF THE DISCLOSURE

~~Disclosed is a~~ A method and an apparatus for regenerating an oxygen-binding ability by reducing the methemoglobin contained in hemoglobin-vesicle by light irradiation. This method ~~comprises~~ includes adding electron donors such as amino acids, saccharides, alcohols, and/or flavin derivatives in appropriate amounts to the inner aqueous phase of the hemoglobin-vesicle, applying light to the vesicle when the content of methemoglobin increases as a result of oxidation of hemoglobin, thereby reducing the methemoglobin. In this manner, the oxygen-binding ability is recovered, thereby maintaining the function of the hemoglobin-vesicle.